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25th August 1978

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MICHAEL BINYON reports
from WashingtonThe Times Higher Education Supplement (London) Room 541
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Washington D.C.

Compulsory 'core' subjects show big drop

Striking evidence of the decline of the general education course in the first two years of university is provided in a new report by the Carnegie Council on Policy Studies in Higher Education.

Between 1966, the year that student activism really got going, and 1974, general education, or 'core' subjects, decreased as a proportion of the total curriculum from 43.1 per cent to 33.5 per cent for the BA degree. Nearly all the decrease was taken up by more elective courses.

This survey of the undergraduate curriculum was made by the University of Michigan, whose Centre for the Study of Higher Education looked at college prospectuses from 271 representative four-year and two-year institutions, and studied 124 student transcripts at 10 selected places within the sample.

General education is the prescribed core of subjects which all students in American universities must follow in common in their freshman and sophomore years. It was against this sample curriculum that many student campaigns were directed in the late 1960s and many universities quickly abolished much of the compulsory element.

The extra time available for elective courses, however, has not been used by students to sample a cross of knowledge outside their intended specialization. Indeed, they spent more time in the academic division within which their 'major' is located than in courses that would broaden their educational experience, according to the study.

In the past year or so students have used the courses in concentration on vocational studies: not at all what was intended by the former generation of students who demanded courses 'relevant' to society.

Students who were able to choose subjects tended to avoid the social sciences in favour of the natural sciences. The study gave a variety of reasons for this: students thought natural sciences were difficult; it was difficult switching from non-science to science majors without having satisfied adequate science prerequisites; and science lost its high status in the late 1960s.

Another point made in the study (which is already a major topic of debate in universities) is the rapid decline in the number of institutions requiring English, mathematics and a foreign language as part of every student's general education.

In 1967 90 per cent of the institutions surveyed required English, compared with 72 per cent in 1974; 72 per cent required a foreign language in 1967 compared with 53 per cent in 1974; and 33 per cent required mathematics compared with 20 per cent in 1974. The percentage of universities and colleges requiring physical education went down even more sharply—from 86 to 55 per cent.

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Ontario sets up industry training board

An Industrial Training Council has been set up in Ontario with a mandate to play a major role in shaping the future face of post-secondary education in the province.

Reporting directly to Dr Harry Parrott, Minister of Colleges and Universities, the council marks a major incursion by Ontario into an area that has been almost entirely a responsibility of the Federal Government.

Announcing the new council, Dr Parrott said such a body was long overdue. Somewhere, the Minister told the legislature, there seemed to be a gap between school and work that was not being bridged as effectively as it might be. Industrial training was a tool to narrow that gap. The difficulty was that industry was reluctant to do the job, because they received no benefits to offset the costs.

Dr Parrott noted that all reports on industrial training agreed that a senior body was needed to reflect the views and needs of all those who had a stake in industrial training. The new council would coordinate everything within the framework of an overall manpower policy for Ontario.

It would have the same status as Ontario's Council of Regents for the Colleges of Applied Arts and Technology, and the Council on University Affairs.

Dr Parrott has given the new body plenty to do. He has asked it to look at the various elements of industrial training and see how they fit into the pattern of provide market demands, labour agreements and individual aspirations.

He also wants the council to synthesize all the mutually exclusive proposals made to the Government by various splinter groups, advice on programmes for school leavers, determine standards and encourage uniformity where necessary, look at the integration of Federal and Ontario's proposals and see whether measures proposed by Ontario create jobs are appropriate.

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New York reopens—but it won't be the same

The City University of New York reopened last Monday two weeks after it shut down because it ran out of money to pay its staff (THE TIMES, June 11).

The New York State legislature approved an emergency grant of \$27m and agreed to a permanent increase in the State's share of the university's budget. But CUNY's price for the rescue was the introduction in September of tuition fees for the first time in the 129-year history of the institution.

The 270,000 students at the 20 different units of the university were able to resume their final examinations which had been interrupted by the abrupt closure.

Many students had help had come just in time to allow students to graduate. Staff were unsure at first whether they would be paid for the enforced holiday, but changes, the first since April, have now been agreed.

The emergency rescue package put together in Albany, the State capital, after much political haggling, goes a long way towards putting the university on a manageable, if austere, footing. The key element is the removal of the stipulation that State funding had to match funding by the City of New York. When the city reduced its contribution, the matching cut by the State made a balanced budget impossible.

CUNY will now have a budget next year of \$470m compared with nearly \$700m it originally estimated it needed.

Tuition fees, which will start next term, will be \$750 for first and second-year students, and \$900 for the next two years.

This is expected to yield \$135.5m a year, and out of this a fund of \$8m will be set aside to provide assistance for part-time students working towards a degree.

The package has also relieved John Jay College, one of the four-year components of the university which had been scheduled for merger. This was vigorously opposed by staff and students. Under the new plan, no college of education will be closed without permission from the legislature.

High Carey, Governor of the State of New York, said he was pleased with the final outcome. The university had been resolutely opposed to the introduction of tuition fees, and there is a sense of relief that the university is back on its feet.

The planned laboratory attempt to investigate the structure of higher organisms into recombinant DNA research, build new forms of life.

"I have received information from responsible biologists that this experiment could be a serious danger to public health," Mr Alfred Velucci, the Mayor of Cambridge, Massachusetts, said.

"We want to be sure the people of Cambridge are not affected by anything that might be a danger to their health," Mr Velucci said. He has been in his opposition by a number of other city officials.

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Greece

Entry numbers slashed to ease crowding

from Mario Modiano

The Government has decided to reduce the number of first-year university places by one-quarter in the coming academic year in order to ease congestion in universities and divert candidates towards technical education.

As a result, only 10,820 candidates are to be admitted this year, compared with 14,365 in 1975-76. At the same time, places in higher technical colleges are being increased from 4,350 to 7,000.

This development, barely two months before the entrance examinations, has provoked strong protests from candidates and parents' organizations. They emphasized that only one-sixth of the 60,000-odd Greek students who will be sitting the examinations can in any case be admitted. And they complain that of the remaining 50,000, only the wealthy candidates will be able to afford the cost of going to university.

Mr Athanasios Talladouras, Under-Secretary for Education, said: "The universities can take no more. Overcrowding is a threat to the standards of education. The number of admissions has been reduced to the level recommended by universities, but also to the requirements of the labour market. There are thousands of university graduates out of work today. What Greece and the EEC need at the moment is technicians. So we decided to almost double vacancies in technical colleges."

He said that one of the causes of overcrowding in universities was the 'parachutists', the privileged students who joined faculties without sitting examinations. Their numbers would be greatly reduced.

Drift legislation was also being prepared to limit the number of enrolments for a second degree to one-fifth of admissions. The number of 'parachutists' at the Athens Law School in 1974-75 stood at 4,510, he said. "Of these 3,226 had registered for a second degree."

The Government's drastic cut in the number of new entries for the next academic year may have provoked the anger of candidates and parents, but was clearly the result of strong pressure from impatient university authorities.

Reports from several universities pointed out that the disparity between the numbers of students and the teaching staffs, as well as class and laboratory facilities, created serious risks that, just while Greece was hoping to join the EEC, the level of education might be recognized by European universities.

One of the oldest and most prestigious of these initiatives has been developed by the postgraduate studies department at Milan's Bocconi Commercial University. The Bocconi University is a private organization, largely financed by Milan's leading firms, and has traditionally supplied trained commercial administrative staff to Lombardy's thriving businesses and banks.

The degrees offered by the Bocconi are fully recognized by the State and have the same legal value as those issued by State universities. As early as 1954 the teaching faculty of the Bocconi realized the necessity for postgraduate courses in business economy and set up numerous post-degree business courses. On the basis of this experience the Bocconi postgraduate department was completely reorganized in 1971, and the Bocconi School of Business Management (SBA) was founded.

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Sweden

Adult learners 'need more attention'

from Mike Duckenfield

STOCKHOLM

Almost one in three adult students experience learning difficulties and those without previous post-compulsory schooling are twice as likely as others to change their study plans, according to two surveys of mature entrants to Swedish universities.

The surveys, based in Lund and Stockholm, found a need for more evening classes, combinations of lectures and group work, individualized tuition and the use of fewer texts in English. As many as 70 per cent of part-timers, who make up the bulk of mature students, said they would not have been able to study full-time or without distance teaching aids.

Regarding potential students, 32 per cent of adults and full degree considered taking up studies during the previous six months. However, the vast majority were already well educated, 85 per cent of those wanting to study at university level having received upper secondary schooling between the ages of 16 and 19.

The desire to improve career prospects (47 per cent) was the main reason for studying and the surveys found that prospective students had made careful consideration of future income and employment possibilities weighed against the cost of studying before enrolling. Surprisingly, 70 per cent of housewives taking up studies did so for career reasons, usually so that they could change jobs.

Fewer than half the mature students intended to take a full degree (41 per cent)—an inclination which decreased with age—and most planned higher studies in terms of course units which could be taken one at a time.

The Stockholm survey dealt mainly with the problem of making people aware of educational opportunities. It found that those with the most education were three times more likely to seek information on adult studies or consider their own educational needs than those with the lowest levels of schooling.

Printed information was only listed as the third most useful form of guidance on study openings. Potential students preferred advice from either vocational counsellors or study leaders with the educational associations.

The Stockholm survey is available in English from the department of education, Stockholm University: Kenneth Abrahamsson, *The Need for a Dialogue*.

Israel

Cutbacks will mean widespread redundancies

from our correspondent

JERUSALEM

Academics are under heavy pressure as a result of severe cuts in the higher education budget for 1977-78. Universities have to stretch on the one hand and to seek sources of extra income on the other.

Retrenchment means the dismissal of unqualified junior academic and administrative staff. Unofficial figures indicate that about 200 of the former and 1,400 of the latter in the seven universities have received dismissal notices.

Extra income is being sought from tuition fees. Students have protested against a threatened increase of more than 100 per cent in the fees—from 2,700 Israeli pounds (roughly £200) to 5,500 Israeli pounds. Another proposal advocates fees of 6,500 Israeli pounds with index-linked interest-free loans and grants.

The students are insisting that any increases be linked to the rise in the cost of living index as was agreed as far back as 1958. This would mean fees of about 4,000 Israeli pounds, an increase of about 50 per cent.

They also argue that more income can be gained by increasing administrative efficiency, by heavier academic work loads, by adding a term in the summer vacation and by cutting development budgets.

East Europe

Choosy graduates wait for pick of jobs

by Paul Neuburg

Far from staging sit-ins to protest at the prospect of unemployment, many of this year's graduates in Eastern Europe will be fighting tooth and nail against taking up the jobs that await them. Young engineers and economists, doctors and teachers will be making use of all the friends and relatives they have in the right places to avoid having to go to grimy factories and distant provinces, where they are much needed, and to find jobs instead of company headquarters and in large cities.

If unable to get the posts they want, a number of them will wait around a year or even two, doing other work or living off their parents. Some will simply put their degrees in a drawer and take up whatever occupations offer the most cash.

In Hungary, where small-scale private enterprise is part of the socialist way of life, young economists running their own grocery stores, engineers producing knitwear on cottage industry basis with their wives and decreed chemicals churning out plastic knick-knacks have recently aroused a good deal of attention.

Their chief reason for having become tradesmen is better money than can be had in the professions, but being able to work in the capital is also important. Some of them say they have turned their backs on their qualifications only as a temporary expedient: to earn enough money to buy a car or to put down the deposit on a flat.

Doctors appear the least inclined to abandon their chosen profession,

but their loyalty to it all too often stops short of willingness to practice in the provinces. With over 25,000 doctors to a population of 10.5m, Hungary claims to be the world's sixth best-off nation in medical care. But 10,000 of those doctors are to be found in Budapest, while in the countryside over 4,000 jobs are vainly awaiting an incumbent.

In Bulgaria and Romania, where the differences between large cities and rural areas are considerably greater than in the more developed countries of Eastern Europe, policies of directing graduates to where the State wants them are tougher, too.

Romania has a system that obliges all graduates to start their careers with a three-year stint in production jobs, assigned to them by the Government, regardless of whether they are qualified as engineers, teachers or lawyers, and whether or not they want to go on to do research.

The decree now in force specifically abolishes the possibility open in previous legislation for people to choose their places of work if they can prove that they are in need of special medical care, which offered such an elastic loophole.

Asking graduates to repay the cost of their education on not going to jobs where they are needed has been tried in various East European countries in the past, and is now being considered in Hungary. To train an engineer at the University of Budapest costs the State some 250,000 forint, roughly equal to 80 months' average pay in the country.



Railway engineers in Budapest: reluctant to leave the capital.

Australia

One in five students 'can't make ends meet'

from John Kirkaldy

SYDNEY

The spending of most Australian students at universities and colleges of advanced education exceeds their income. One student in five has to draw on savings and many others have to rely on substantial help from parents and other sources.

These are some of the facts contained in a report by the Federal Department of Education and the Australian Union of Students (AUS). The report is based on a survey of 4,456 full-time and part-time students at universities and other tertiary institutions in 1974.

The Federal Government was found to provide 40 per cent of full-time students with their income through the Tertiary Education Assistance Scheme (TEAS). This was the largest single source of student income, followed by a third of students who receive their income from State teacher training programmes. Other sources were finance from other Government agencies, cadetships and sponsorship from private firms.

The maximum TEAS annual allowance is \$31,400 for dependent students living away from home and \$4500 for dependent students living at home. Only a third of students receiving the TEAS allowance, however, are on the maximum award.

Only one in four students questioned in the survey believed that they had enough money to make ends meet. Holiday jobs and part-time jobs were found to account for 20 per cent of income.

The report did not investigate the relationship between part-time work and academic achievement, but it found that "several full-time students reported the need to work during the year was adversely affecting their studies."

Older students and students with dependents usually had higher incomes, and the median annual income for male full-time students was \$5152 a year higher than for full-time female students.

The report will add extra weight to student arguments for increased support from the Federal Government. They point out that the poverty line for a single person in Australia is considered to be \$447 a week but a person on the maximum TEAS allowance receives only \$332.

Last year the AUS campaigned unsuccessfully for the maximum TEAS allowance to be raised to \$4500 a year and to be indexed to the cost of living. The recent budget cuts and financial guidelines announced for education by Mr Philip Lynch, the Treasurer, and Senator John Carrick, Minister for Education, make any large increases in student allowances in the near future very unlikely.

Bussing experts continue to agree to differ

Professor James Coleman, the Chicago sociologist who is a leading opponent of bussing as a means of integrating schools, formed part of a group of academics who met the renewed controversy over bussing.

At the same time Professor Coleman hit back at two of his leading critics who virtually accused him of fraud in his use of research data.

Replying in the current issue of the *Harvard Educational Review* to criticism from Harvard and Professor Robert K. Coles from Michigan State University (THE TIMES, April 16), Professor Coleman said he did not question their obligation to speak out on a policy that they believed helped to create racial segregation.

Instead, he said, he accepted the research results and destroyed the legitimacy of any opposition to actions.

There was a common belief, he said, among those deeply committed to the current policies of compulsory racial balances that social-science research should be wholly in the service of those policies.

Several actions followed this belief. One was to attempt to suppress, counteract, or throw doubt on any research that led to questioning of these policies.

Another was to use favourable research results, even Professor Coleman added in parentheses, when the research was poorly done.

While where tension is now high, constituted "a remedy that is wholly inappropriate for the injustice that was found."

They saw Mr Ford at a time of mounting controversy over the President's declaration that he wanted to introduce legislation to limit bussing orders to five years, limit to restrict the instances in which bussing could be ordered.

In his letter to the *Harvard Educational Review*, Professor Coleman said Pettigrew and Green had mixed up desegregation in city centres and metropolitan areas in 'white flight'.

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Court backs 'secret' research

A California court has ruled that a Harvard professor need not disclose information obtained confidentially in the course of academic research. This is believed to be the first time that a court has specifically proclaimed the confidentiality of research, and the ruling has important implications for academics throughout America.

The case involved Professor Marc Roberts from Harvard's School of Public Health and his assistant who was studying the environmental health decisions made by the Pacific Gas and Electric Company in California.

Another, the plaintiffs tried to get details of Professor Roberts's confidential interviews to use in their evidence.

The judge, citing the First Amendment which protects the freedom of the press in America, refused. He said: "Compelled disclosure of confidential information would without question severely stifle research into questions of public policy, the very subjects in which the public interest is greatest."

The university fought the case strongly. It believed that forced disclosure of information in civil cases would cripple the case with methods used by most graduate schools of business. Most companies taking part in such studies agree only on strict conditions of anonymity.

The ruling does not mean that researchers have absolute immunity, however. If any criminal activity is suspected, the court can compel disclosure.

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Harvard row over genetics plan

In a curious case more to science fiction, the citizens of Cambridge, Massachusetts, have seriously alarmed that the Harvard University plan to transplant the genes of a recombinant DNA research into a human embryo.

The planned laboratory attempt to investigate the structure of higher organisms into recombinant DNA research, build new forms of life.

"I have received information from responsible biologists that this experiment could be a serious danger to public health," Mr Alfred Velucci, the Mayor of Cambridge, Massachusetts, said.

"We want to be sure the people of Cambridge are not affected by anything that might be a danger to their health," Mr Velucci said. He has been in his opposition by a number of other city officials.

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First 'consortium' students graduate

Among the 56,000 or so students graduating from the 19 campuses making up the California State University and Colleges this year is a group of 12 whose diplomas will not bear the names of any single institution.

The group is the first batch of students who will graduate from a consortium of the system as a whole. Under an external degree programme, begun two years ago, students are able to enrol in graduate courses, which draw on the teaching resources of all 19 campuses.

About 1,000 are now in this programme, most of them older students with an average age of 52. They attend classes at locations close to their homes or work.

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BOOKS

Russian lament

Requiem and Poem without a Hero by Anna Akhmatova
translated by D. M. Thomas
Rak, £3.95
ISBN 0 236 40027 4

Dubbed "poetess" by her translator, Anna Akhmatova wrote the poetic equivalent to Nadezhda Mandelstam's biography *Hope against Hope*. They were friends, both lovers of Leningrad and persecuted because their husbands' writing was disrespectful of Stalin. Akhmatova was a member of the Acmeist literary group; her husband, Gumilev, was shot in 1921; her son and the man with whom she subsequently lived were both arrested—the son exiled to Siberia where he died, the friend arrested and imprisoned for a crime. She herself was out of favour; her intimate, yet restrained, lament for her private grief and identity with fellow sufferers were not required by Zhidovov, chief promoter of Socialist Realism; the obedient Writers' Union expelled her and her poetry remained unpublished until after Stalin's death in 1953.

In the very full introduction Mr Thomas writes a historical background and also a treatise on the art of the translator; from this it is clear that he writes for readers innocent of Russian history and language; he compares versions by other translators, aware that they may also criticize his interpretation of what Akhmatova would desire. Questionable is his omission of the grieving "wives of the strygz", rebels under Peter the Great, putting in instead: "to our own welling wall... the Kremlin"; would she have liked this deflection to Jerusalem? And in referring to Akhmatova's immersion in literary background, Mr Thomas writes, after mentioning Blok and Pushkin: "Soviet theology dismisses the Soviet past as worthless". This surely is too sweeping; worship of Pushkin embraces the police who turn away demonstrators from

his status! The two poems, "Requiem" and "Poem without a Hero", have not been published in full in the Soviet Union. In this slim and elegant book they are followed by three lyrical poems from 1913 and 1914.

"Requiem" is the simpler of the two main poems and is in seven short sections which describe the police terror in 1937-38 under Yezhov. The effect of the concise but long words is strong:

Son in irons and husband lay.
Pray, Pray.
Unlike the concentration of "Requiem", "Poem without a Hero" is incredibly diffuse and so full of allusions to historical, literary, personal and apparently imaginary figures, that all Thomas's notes generally fail to make the meaning clear. This is not to deny, however, the rare glimpse of sunshine in dreamlike madness recalling the past:

From nowhere you came to Russia,
O my blonde-haired wonder.
Our second decade's Columbine.

Why do you gaze so sharply
Petersburg doll and actress,
You, my double, my twin.
This Thomas attributes to Nadezhda Mandelstam's impression of Akhmatova.

The final three lyrics have touches of humour, but they are from 1913 and 1914:
Well, it wasn't an embrace
More like the way you'd stroke
I would have preferred to have the original Russian opposite the translation as in *Poems of Akhmatova* by Kunitz and Hayward. This Thomas selects a few poems Thomas produces a volume which is almost half notes. With but few lighter moments it is lament, grief and obsession all the way.

Kathleen Williams

Freud's people on Freud

Freud and his Followers
by Paul Roazen
Allen Lane, £10.00
ISBN 0 7139 0981 1

It is nearly 20 years since the publication of the final volume of Ernest Jones's monumental biography of Sigmund Freud. In his introduction to the abridged version, Lionel Trilling suggested three reasons for the compelling interest that so many have felt concerning Freud: the nature of his studies and scale of his achievement; as a radically new theory of mind, psychoanalysis has had an incalculable effect upon the life of the west. Second, the need to understand the development of Freud's thought and relate it to the creation of psychoanalysis. Third, "the style of the life itself, the charm and significance which we find in its legendary quality".

Any biographer of Freud must accept that his work will be evaluated in terms of the criteria. Paul Roazen in *Freud and his Followers* has now written the full-scale biography presaged a few years ago in his account of the relationship between Freud and Tausk. Roazen has drawn on Ernest Jones's biography, but also on a length some seventy psychoanalysts or others who had either been part of Freud's circle, his patients, or could contribute to the understanding of the early days of psychoanalysis. Roazen says that his aim was to discover "What was Freud really like?" In order to answer this question he recapitulates the history of the psychoanalytic movement and reconsiders Jones's biography in the light of the new material revealed by the interviews.

Thus, the main emphasis of the book is not the theory of psychoanalysis, but the relationship between the character of Sigmund Freud and the movement he created. The difficulty with this type of biography is stated succinctly by Roazen: "The psychoanalyst was 'science' and grounded

on objective evidence, and yet at times Freud would point to the autobiographical nature of his discoveries. How was a follower to keep clear which part of Freud's work represented a contribution to neutral science and which merely reflected personal idiosyncrasy? For that matter how was Freud himself to tell in a given case whether one of his ideas was realistically being threatened with distortion by a follower or whether one of his personal complexes had been activated by an ambitious and rivalrous disciple? Freud thought he had special property rights to his field, and at the same time wanted to think of psychoanalysis as independent of human will and a part of Western science."

Faced with this problem, and also with the complex interplay of a small group of active and jealously competitive groups of people clustered around an elderly genius, Roazen cannot be said to have succeeded. The book may be divided into three parts: Freud's background; an interpretation of his character, leading into the public quarrels with Jung, Adler and others; and finally an account of the "movement" after the First World War.

The first part of the book is hardly more than a gloss on the Jones biography, reinterpreting Freud's early life, his marriage and his relationship with Minna Bernays in a less idealized way than in Jones's account. In the second section Roazen treats the early history of the movement and the controversies with Adler, Stekel, Jung and others. This is perhaps the most interesting part of the book, in so far as Roazen tries to give both sides of the quarrels between Freud and his colleagues. What emerges very clearly are the enormous difficulties that highly intelligent and able men had in working closely with Freud, particularly when they differed from him or sought to modify his ideas. For Freud, it was essential that his theory was

not watered down or trivialized; he was ready to fight and destroy anyone who threatened achievement. Roazen never fully states the best comment is that of Freud, describing with grace his travel phobia, "a constant fear that he analyzed his daughter, while at the same time professing to admire him. Perhaps the best comment is that of Andreas-Salomé: "a constant fear, should we not be a little rather than chilled by the knowledge that he might have greatness only through his limitations".

The final part of the book, certain those analyses who were with Freud—the loyal ones. Although it is here that new material is concerned, the book loses its way and becomes tedious. The numerous quotations from Freud's letters, particularly as they concern ancient rivalries and quarrels for position and power, Freud encourage seem to add nothing.

It seems fair to say that, despite the book's length, it is a well-written, readable, and in some ways a rewarding for the reader, anxious to learn the change of analytic thought, in a manner in which so much material has been slanted in his secret untruthfulness. The book of extracts from ancient alchemical works, presumably represented a Herculean effort to recover nuggets of metallurgical information from the gibberish of self-deluded adepts.

H. P. Lock

From lyricism to eroticism

Gullienne Apollinaire: Alcools
edited by Garnet Rees
Allen Lane, £3.00 and £2.50
ISBN 0 485 14701 4 and 12758 3

Gullienne Apollinaire: Les onze mille verges. The Amorous Adventures of Prince Morey Vibescu translated by Nina Roques, and with an introduction by Richard N. Coe
Peter Owen, £4.75
ISBN 0 7206 0174 6

Appearing under a handsome dust jacket with a Marianne illustration, this is the third volume of the *Alcools* to be published in Britain or America in the last 10 years. It shares with its predecessors a high degree of competence and accuracy in its documentation. What chiefly distinguishes it, perhaps, is the quality of the translation. Rees's compact but judicious introduction of Apollinaire in the introduction.

Without ignoring biography, this study concentrates on the poetics, themes and style of *Alcools*. In particular, pride of place is naturally given to the creative tension that Apollinaire sought between tradition and invention, the precise language of these concepts being illuminated by an excellent choice of quotations not only from his own work, but also from the work of Baudelaire and Valéry. A clear line is cut through the vexed, and often confused, question of the influence of Cubism on his modernism. The modernist poet is quickly disposed of, but the study shows convincingly that the aesthetic of Cubism's break with representation encouraged Apollinaire's own evolution away from mimetic to a more autonomous form of poetry.

What is pleasing about this discussion, and that of the central themes of the volume—transience and permanence, the quest for self-identity, *erances*, love and prophecy—is that they are constantly coloured by concrete analyses of style and technique. There are nice demonstrations of Apollinaire's personal inflections of vocabulary, imagery, verse form and metre, and of his extension of subject-matter to embrace the banal and the quotidian. The cumulative effect of

these innovations is excellently defined as being the demand for quonco and the creation of a new, more immediate poetic instrument. There are observations rarely made by other commentators, such as the importance of the visual sense in Apollinaire's nature poem of great perceptiveness as well as an urban poet. Thus, in welcome contrast to the frequently arid abstractions of contemporary French accounts, Rees contrives to give the reader an impression of the tone, texture and atmosphere of the verse he is discussing.

The impression finally left is one of inventiveness, of the innovative aspects of Apollinaire's work. Despite a leavening of cautionary remarks, some new readers could be left unprepared for the often heavy layers of Symbolist influence and poems encountered in many a good extent, however, the balance is rectified in the notes. In any case, some Apollinaire scholars might argue—although others could violently disagree—that the most interesting aspects of *Alcools* are those that look forward in the more outright modernism of *Calligrammes*.

It is not as big a jump as it at first appears from the elegiac or exalted lyricism of *Alcools* to the erotic lyricism of *Les onze mille verges*. Any careful reading of Apollinaire reveals strong undercurrents of eroticism in all his work, even the most wistful and tender. We know from the posthumously published letters and poems to Lou de Colligny that he was not averse to practising personal gymnastics extolled in *Les onze mille verges*. The difference between this novel and the rest of his work is simply that what else, camouflaged in a more subtle and joyous abandon, the explicitness is such that it is only recently (1970 and 1973) that the book has been openly published in France, and now in its English publisher has deemed it prudent to omit several of the most elegant passages. The book's classicist literary has inevitably meant that the crucial

critical issues concerning it, barely even referred to. The question of whether this is a case of pornography, or of pornography transcended. The usual answer has been to put it in the category of "eroticism", but also partly in the category of "eroticism". The book is a nature poem of great perceptiveness as well as an urban poet. Thus, in welcome contrast to the frequently arid abstractions of contemporary French accounts, Rees contrives to give the reader an impression of the tone, texture and atmosphere of the verse he is discussing.

While recognizing and appreciating the inventiveness of the poet, the book is a nature poem of great perceptiveness as well as an urban poet. Thus, in welcome contrast to the frequently arid abstractions of contemporary French accounts, Rees contrives to give the reader an impression of the tone, texture and atmosphere of the verse he is discussing.

Nevertheless, after this excellent reading. There are some episodes that do not fit comfortably into the poetic framework, and it is revealing that, at one point, Apollinaire makes a sadistic reference to the "eroticism" of the novel which he is discussing. The book is a nature poem of great perceptiveness as well as an urban poet. Thus, in welcome contrast to the frequently arid abstractions of contemporary French accounts, Rees contrives to give the reader an impression of the tone, texture and atmosphere of the verse he is discussing.

S. I. Lock

BOOKS

Last of the magicians

The Foundations of Newton's Alchemy or "The Hunting of the Green Lyon"
by R. J. T. Dobbs
Cambridge University Press, £10.50
ISBN 0 521 20786 X

"Newton was not the first of the age of reason. He was the last of the magicians." That "unfortunately memorable phrase" of Lord Keynes has rankled with many historians of science ever since it was first published in a Newton tercentenary volume in 1947. Keynes had helped to save the great body of extant Newtonian manuscripts from dispersion when it came under the auctioneer's hammer at Sotheby's in 1936. His judgment was based on a sampling of the hundreds of thousands of words in Newton's hand on alchemical and theological topics—often in Latin—carrying on the round of official duties in his London.

Keynes was suggesting a staggering paradox. How could a founding father of modern science have been himself a "magician"? True, attempts to consign Newton's prodigious labours to his domestic had come to grief. Perhaps his religious work was best understood as a supreme rationalist's wrestling with incomprehensible dogma, and in his secret untruthfulness. The book of extracts from ancient alchemical works, presumably represented a Herculean effort to recover nuggets of metallurgical information from the gibberish of self-deluded adepts.

But as the raw material supplied by the manuscripts is carefully worked over, the "Newton industry" of recent decades, our picture of Newton begins to change in startling fashion. Keynes may have been wrong to split Newton into two selves, a rational scientific one displayed in public and a hidden mystical and magical one. He was, however, probably nearer the mark than Enlightenment eulogists in his view that Newton:

looked on the whole universe and all that is in it as a riddle, as a secret which could be read by applying pure thought to certain evidence. . . . He believed that these clues were to be found partly in the evidence of the heavens and the constitution of elements, but also partly in certain papers and traditions handed down by the brethren in an unbroken chain back to the original cryptic revelation in Babylon.

R. J. T. Dobbs's study of the alchemical manuscripts makes a valuable contribution to the revision of our image of Newton. The most valuable part of the book is the two chapters (pages 126-232) which closely examine those manuscripts which, after painstaking hand-writing analysis, are assigned to the earliest period, between 1668-75, and constitute about 10 per

cent of the extant alchemical manuscripts. The alchemical manuscripts have been studied in conjunction with Newton's careful record of chemical experiments. That procedure may seem obvious; but as the author acknowledges, it was usual to separate them sharply until some recent studies suggested ways of overcoming the notion of a hidden duality in Newton.

What was Newton searching for in alchemy? Dobbs convincingly documents the suggestion of some earlier studies that his findings and experiments make sense only when related to the alchemical idea of a "universal spirit" originally involved in the creation of all terrestrial bodies and continuing its office in the processes of generation, nutrition and growth in the animal, vegetable and mineral kingdoms. Newton's conviction of a secret "wisdom of the ancients" made it possible for him to reconcile what we may see as a flagrant contradiction between such a belief and his acceptance of the new mechanical view of nature.

The "mechanical philosophy" profoundly affected Newton's approach to alchemy. He tried to relate alchemical concepts in chemical and mechanical terms. His experiments were marked by a quantitative precision lacking by traditional alchemy. In the absence of certain crucial chemical concepts, such as the concept of the "universal spirit", we can see by hindsight from some alchemical delusions. Many of his early experiments aimed at obtaining the "mercury of metals", the principle which was believed to confer specifically metallic properties. In fact, the "chymists" merely recovered the mercury from the volatile sublimate of mercury which they heated with various metals. Newton was careful to use equal weights of sublimate and various metals, but since he did not use chemically equivalent weights (a much later concept), he continued to obtain mercuric products contaminated with the original metal, reinforcing the belief that he had recovered the "mercury" of that particular metal.

Newton's method was very different from that of someone merely looking for bits of useful information in alchemical authors. He selected the most esoteric and mysterious passages, those most likely to contain the hidden secrets of the ancients. These were analysed, using cross-references to other alchemical writings, his own chemical knowledge, mythology, or anything else of conceivable relevance. The resulting hypotheses were then tested out in laboratory operations.

The mechanical and particulate view deeply influenced Newton's alchemical explorations. But the converse may have been of far more fundamental and permanent significance. Dobbs's hypotheses were then tested out in laboratory operations.

The mechanical and particulate view deeply influenced Newton's alchemical explorations. But the converse may have been of far more fundamental and permanent significance. Dobbs's hypotheses were then tested out in laboratory operations.

various phenomena (including gravitation) in terms of an all-pervading medium. He soon realized the logical regress involved in such explanations: the activity of aetherial particles would have to be attributed to even more subtle particles, and so on. Accurate pendulum experiments convinced him that no such medium existed.

Professor R. S. Westfall has recently suggested that these considerations led Newton to bring back the attractions and repulsions which mechanists had banished from science, the move being facilitated by the apparent sympathies and antipathies to which alchemical experiments had directed his attention. When Newton seriously began work on the dynamics of orbital motion in 1679-80, he applied to the cosmos a force of attraction analogous to that employed by the "chymists". Dobbs speculates on the part which the apparent success of his alchemical "magnet" may have played: "The universe lived again as Newton's thoughts swung on towards the *Principia* in the 1680s, far forces and active principles were everywhere." His alchemical work proceeded with redoubled zeal in the years of feverish labour on the *Principia*. There is such evidence that Newton had hoped to present there a system quantifying not only the gravitational force that ruled celestial phenomena, but also the short-range forces responsible for the properties and actions of all corporeal things—a dream which was ever to elude him.

In her last chapter Dobbs attempts to trace the fate of those early notions by reviewing his mature chemical thought. Transmutation appeared far more difficult as Newton developed his ideas of a hierarchical structure in matter, and he probably no longer believed that his mercury had dissolved into its particles of "first composition". But he never seems to have abandoned the hope of achieving transmutation. Alchemical notions deeply underlie his speculations on the cometary spirit of the *Principia*, on the relation between colours and particle-size and on the inter-convertibility of light and matter in the *Opticks*.

Various problems can be raised about the details of Dobbs's interpretation, particularly when she moves away from chemical and alchemical topics. Some reflect imperfect knowledge of the intellectual climate which Newton inhabited; others arise from isolating the alchemical work from Newton's theological and Biblical studies. The other chapters which attempt to place alchemy within its historical and conceptual setting raise similar problems. But these criticisms do not detract from the sound achievement of her general interpretation of his alchemical endeavours which all future assessments of Newton's thought will have fully to take into account.

P. M. Rattansi

Logic in the Middle Ages

History of Mathematical Logic from Leibniz to Peano
by N. S. Shtetkin
MIT Press, £2.75
ISBN 0 262 19057 5

This is a paperback version of an MIT translation (anonymous translator) of 1969, the Russian original being published in 1964. Despite a translation of very variable quality (the translator seems to have little knowledge of the usage of some mathematical terms), and an original which thinks it useful to conclude a good summary of Duns Scotus's logical doctrines by quoting Mar's rapid comments from the "Debate on the Free Press" or "to correct this interpretation" of little better quality from Leibniz, the book is a useful introduction to the history of logic in the Middle Ages and this is useful so long as one discounts the value judgments

which are based on a presumed equivalence between those who had trouble with the Papacy and those who were original logicians. (Since the two sets, considered in extension, are very similar, no great harm is done.) The following chapter on Leibniz quotes Russell's praise but fails to make clear whether it really was justified. The chapters on Leibniz's successors—namely Lambert, de Morgan—are bound to say a bit, but the story picks up again with Boole.

Now Boole is a difficult character to deal with, not least because of his propensity to change definitions as he goes along. But surely Boole's definition of addition is not *always* strict disjunction (or Boolean addition, as we now say), and we have to distinguish between the formal definition of addition and the interpretation. Formally Boole first added addition between two disjoint classes. The definition can be maintained even when they are not disjoint, but it is an

"uninterpreted form". And then it is the union which is the sum less the product, making a system which fits the syllogism very well. But if Shtetkin goes wrong there, he is very good on Boole's later work, especially the use of division.

The final chapter can fairly be described as post-Boole. Jevons, Shridder, Peirce, Frege and Peano are all dealt with fairly shortly, but the best thing in the chapter is the account of Peirce's and Burks's, on whom it is difficult to find anything not in Russian. There is a need for a book with the aims of this one—a better title would be "From the Middle Ages to Boole (and Peirce)"—but it would be over-generous to say this fulfilled it. It is useful for students of logic (whether mathematical or not) in sketching the ground, and in its bibliography of over 300 items.

C. W. Kilmister

After fossil fuels

Non-nuclear Futures: the Case for an Ethical Energy Strategy
by Amory B. Lovins and John H. Price
Wiley, £7.15
ISBN 0 8410 602 0

According to the authors the two possible replacements for the rapidly disappearing fossil fuels, oil and coal, are either centralized nuclear (fission) power with its supporting intensive technology or decentralized power from solar panels and wind pumps. No quantitative data are given for the viability or cost of this non-nuclear alternative and no mention is made of the possibilities of power derived from either wave motion or the earth's mantle.

In the first part Lovins gives what he describes as "an annotated assessment of the state of impact of human fallibility and malice on some highly engineered and persistently hazardous systems", i.e. nuclear power stations. He assesses the problems of radioactive leakage, the longevity of some of the radioactive products of fission, and the difficulties of the transport and storage of hazardous materials. He considers the probability of local accidents and the more sinister possibility of the proliferation of nuclear weapons arising from the world-wide availability of fissile materials and of nuclear technology.

The second part is based on a study made in 1974 (and subsequently updated) by P. F. Chapman and N. Mortimer, of the future world energy requirement and its satisfaction by nuclear power. This study was published as an internal memorandum of the Open University. The scientific reader will be concerned that before its publica-

tion in this book, the study had not been submitted to a scientific journal, in a "complete and rigorous" form.

A world-wide exponential growth of power requirements is assumed for the thirty or so years of the study. For the United Kingdom the 1973 projection of the Central Electricity Generating Board of the power requirement to 2000 is adopted. This gives an approximate demand-doubling time of 4.3 years; much shorter times are adduced for the United States and other countries. The validity of such estimates is difficult to judge.

A detailed argument is applied to six types of nuclear reactor for the net balance of the input power requirement for building and maintenance against the power output, bearing in mind the state of enrichment of available uranium-bearing ores. The central theme is whether the total of nuclear power stations, in a period of dramatic growth needed to replace conventional stations, will be a net consumer rather than a net provider of energy. The significance of this consideration is not made clear, especially since fossil-fuelled power stations consume three to four times the actual output.

The two parts of the book are welded together by Lovins in an introduction which would have been better as a conclusion. This is typical of the basically unscientific presentation. The writers are too committed to their point of view, which may of course be valid. A cooler comparative appraisal of the non-nuclear alternative might have made their case convincing. The book is to advocate a suitable alternative and to demonstrate its relative attractiveness.

R. E. Burge

WHAT PEOPLE ARE SAYING ABOUT

THE RUSSIANS

Exceptionally well informed and balanced, with just the right mixture of sympathy and criticism, and in the best traditions of good journalism. He was able to provide a most authentic flavour of everyday Russian life...

ALEX KNOVE,
Department of International Economic Studies,
University of Glasgow.

The Russians—what a delight! Fascinating... important... unique. Only Rick Smith could have written it. Judging from the ingenuity of the people he describes, I would guess many Russians soon will be reading it too, surreptitiously. It might even find its way into the closets of Politburo members.

VANCE TACKARD

The Russians, by Hedrick Smith, is a superb in-depth study of Russia and its people as they really are. The author for three years the New York Times correspondent in Moscow, has penetrated behind the curtain to reveal the people, their often contradictory attitudes, their hopes and opinions, and the complex nature of the system and vital issues concerning Russia today—in startling detail. Typically, *The Russians* coincides with a fresh wave of public interest concerning the country that has spawned one of the major, and most controversial, literary figures of this century.

572 pages. Map and papers. ISBN 0 7230 0445 6. £6.50.

TIMES BOOKS New Printing House Square,
Gray's Inn Road, London WC1X 8EZ.
Represented by Ward Lock, 116 Baker Street, London W1.

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The Centre is one of two Regional Management Centres designated by the Department of Education and Science for London and the Home Counties. It will be a self-contained institution within the Polytechnic of Central London, having as founder members the five Inner London Polytechnics and South West London College, and with affiliation open to Management Departments of Polytechnics and Colleges within the area.

The Centre will be concerned with identifying the major management training needs of the region, and with the effective development and employment of resources on a voluntary collaborative basis. Appointment in the first instance for three years. Secondment considered. Salary in accordance with that of a grade VI head of department in the Burnham FE Report, but would be within the range £8,600-£9,315 (inclusive of London Allowances). For further particulars write to: F. W. Oakley, Esq., C.B.E., Chairman, Formation Committee, c/o Polytechnic of Central London, 209 Regent Street, London, W.1.

Overseas

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QUALIFICATIONS: A Degree with a Major in Sociology. Preference will be given to candidates with Post Graduate qualifications and/or suitable experience in industry, Government or Field Research.

SALARY: A\$12,835 to A\$17,228 per annum according to qualifications and experience.

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BRISBANE, AUSTRALIA

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Ref. No. 76/A/5

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B. F. McARTHUR, Registrar.

The New South Wales
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Sydney, Australia

The New South Wales Institute of Technology is a corporate institution for higher education established to provide a wide range of professional courses for those entering or already employed in industry, government and technological fields. The Institute, which is a degree awarding body, is currently undertaking a major building programme on a central site in Sydney. Applications are now invited for a number of senior academic positions in various Faculties.

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At present the majority of students in the Faculty of Business Studies are enrolled in the Bachelor of Business Degree Course while postgraduate courses are currently being developed for introduction in the near future.

Head of the School of Finance
& Economics

SA25,955

Ref: 76/097

The appointee to this Chair will be responsible for the academic leadership of the staff, and day to day operation of the teaching and research work. As the Head of School he will be, ex-officio, member of the Academic Board and the Faculty Board and may be called upon, in the future, to assume the duties of Dean of the Faculty. The School will soon be offering an area of concentration within the Bachelor of Business degree in Applied Economics. Further, a Post-Graduate Diploma in Finance is being planned for introduction in the near future. It will further be offering Finance and Economic subjects in other Post-Graduate courses that are being developed in the Faculty of Business Studies.

The appointee must possess a Ph.D. with emphasis in the field of Finance. Applicants will also have appropriate experience in higher education in the Business Studies field obtained by lecturing and/or administering in a Faculty of Business Studies at a recognized institution of higher education. It is desirable that the Head of the School will have had business experience acquired in a responsible position in a company of some significance. Alternatively he may have acted as a consultant to business or to government. The Council of the Institute encourages academic staff to undertake limited professional consulting for industry and commerce. Opportunities for research work are also available. The position of Head of School carries tenure and provides for Superannuation and Long Service Leave. The appointment will be effective from January, 1977 or July, 1977.

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& Public Administration

SA25,955

Ref: 76/098

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The School offers core subjects to all students taking the Bachelor of Business Degree, concentration subjects for the two fields of Operations Management and Public Administration, and is responsible for the integrating subjects at the end of the Degree which are Business Policy and Business Simulation. Further, the School plans to introduce a Post-Graduate Diploma in Personnel Management and Industrial Relations in the very near future.

The appointee must possess a Ph.D. with emphasis in the field of Management and should have previous experience in teaching and administering in a School of Business Administration. It is desirable that the Associate Head of the School will have had business experience or experience as a consultant to business or to government. Academic staff are encouraged to undertake limited professional consulting for industry and commerce. Opportunities for research work are available.

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Senior Lecturer in Finance

SA17,569-SA20,421

Ref: 76/099

Applicants should possess a Ph.D. or equivalent qualifications with a major field of Finance and have had several years of teaching experience. The successful applicant will be well qualified in finance studies and have a sound quantitative background. Lecturing experience at a university or other tertiary institution and practical experience

in business or Government is desirable. The duties of the appointee will include lecturing and coordinating in one or more subjects such as Financial Management, Financial Institutions, International Finance, and Investment Analysis and Portfolio Management.

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Economics

SA17,569-SA20,421

Ref: 76/100

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FACULTY OF ENGINEERING

Ref: 76/102

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School of Civil Engineering

SA21,555-SA22,247

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FACULTY OF SCIENCE

Ref: 76/103

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Pathology

School of Life Sciences

SA17,569-SA20,421

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Faculty of Mathematical
& Computing Sciences

Ref: 76/093

Senior Lecturer/Lecturer
School of Computing Sciences

The School of Computing Sciences offers a Bachelor's degree course in Computing Science, a postgraduate diploma in Data Processing and a Master's Degree by research work and thesis. The School has an academic staff of 23 engaged in lecturing, research and consulting to industry. Successful applicants will have a higher degree and preferably some lecturing experience. Demonstrated ability and interest in operating systems, data communications, large system development and management, or on-line data acquisition/control would be of value. The appointee will conduct classes, supervise research and projects, and actively pursue research or consulting. A Senior Lecturer could expect a salary in the range SA17,569 to SA20,421 and a Lecturer SA12,835-SA17,228.

Fares and a contribution toward removal and initial accommodation expenses are provided for overseas appointees. A Housing Loan Scheme is also available.

The President of The Institute, Dr. R. L. Werner, will personally be conducting interviews in London in September this year. Applications for all positions close on July 10, 1976. Applications should include transcripts of academic qualifications and applicants are also asked to arrange for three confidential referees' reports to arrive by the closing date. Applications and referees' reports are to be sent to The Agent-General for New South Wales, N.S.W. Government Offices, 66 Strand, London WC2N 6LJ, England.

Overseas

The British Council

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Benefits: free furnished accommodation; overseas and children's allowances. Two-year contract, renewable. 76 AU 85

Senior Lecturer in Contemporary English
Literature (Poland)

Marie Curie-Skłodowska University, Lublin

Honours degree in English from British university. Postgraduate qualification, preferably doctorate. British university teaching experience.

Salary: £5001-£6845 pa.

Benefits: free accommodation; overseas allowance. One-year contract, renewable. 76 CU 102

Return fares are paid. Local contracts are guaranteed by the British Council.

Please write, briefly stating qualifications and length of appropriate experience, quoting relevant reference numbers and date of post for further details and an application form to The British Council (Appointments), 65 Davies Street, London W1V 2AA.

Lecturers in English Language and
Literature (Qatar)

Faculty of Education, Doha

(a) Lecturers in English Language.

(b) Lecturer in English Literature.

(c) Language Laboratory Instructor in English.

Posts (a) and (b): Candidates must have a higher degree and at least two years' lecturing experience in British, Canadian or accredited American university.

Post (c): Graduate candidates with TEFL qualification and language laboratory experience.

Salary: £8245 pa (increase under review). No local taxation.

Benefits: free furnished accommodation; free medical service; annual passage-paid leave; terminal gratuity. Three-year contracts, renewable. 76 AU 89-92

Lector in English Language (Romania)

Pedagogical Institute, Bacau

Candidates, preferably single, with relevant TEFL experience. Formal TEFL qualification desirable.

Salary: 3500 lei per month tax free, plus sterling subsidy of £1787 pa paid in Britain.

Benefits: free accommodation; employer's portion of superannuation; medical scheme. Contract for 10 months initially, renewable. 76 SU 103

Lecturers in English (Saudi Arabia)

Medical Faculty, Riyadh University

Candidates must be graduates with qualification or substantial TEFL experience.

Salary: SR 38,880 pa, minimum (£6220 at current rate). Tax free.

Benefits: free unfurnished accommodation plus furnishing allowance. One-year contract, renewable. 76 AU 24-7

Administration continued

PRINCIPAL FURTHER EDUCATION
OFFICER

£5889-£6564 + £312 p.a. supplement

(subject to review)

Post Ref. E3002/THES

This is an exciting and challenging opportunity for an applicant with an appropriate qualification at degree or equivalent level, good teaching background and wide experience in Further and/or Higher Education Administration. The Further Education Division is part of the Directorate of Educational Services and has responsibility for five colleges of varied size and character and is actively involved in a programme of rationalisation and development of Further and Higher Education. Adult Education is soundly based on the Colleges, and the Authority provides a well developed Youth and Community Service working closely with voluntary bodies.

The specific areas of management responsibility to be undertaken will be determined with the successful applicant and will include provision of professional support and advice to the Chief Further Education Officer on the development of higher/further education building policy and programmes on staffing establishments and assisting with the preparation of financial estimates. In addition, opportunities will occur to work across the board with colleagues in other Divisions on community programmes and the like.

Generous removal expenses and assistance with housing will be available in appropriate cases, and a car allowance is payable.

Application forms may be obtained from the Staffing and Training Unit, Directorate of Educational Services, 4th Floor, Provincial House, 17-19, Broad Street, Bradford BD1 1NP. Please quote Post Reference on the envelope.

City of Bradford
Metropolitan
Council

ROSPA

The Royal Society
for the Prevention of AccidentsSCOTTISH ORGANISER -
OCCUPATIONAL SAFETY - SCOTLAND

Possibly future Assistant Director (Scotland)

The Scottish Organiser will be responsible to the Director for Occupational Safety at ROSPA Headquarters in Birmingham for providing an Occupational Safety information and advisory service to members in Scotland. The appointment will originally be based in Stirling, and may in due course be more conveniently sited in Edinburgh or Glasgow.

ASSISTANT ORGANISER -
OCCUPATIONAL SAFETY - SCOTLAND

Responsible to the Scottish Organiser for Occupational Safety for the organisation of Seminars and Training courses particularly for member companies in the North of Scotland. This position will be based originally in Stirling but may later be established in Aberdeen. Invitations are invited from candidates with an established reputation as a lecturer in Engineering or similar subjects. Knowledge of current practices in the field of Health and Safety at work would be an advantage. Further particulars and application forms can be obtained from the Personnel Officer, The Royal Society for the Prevention of Accidents, Queen House, The Priory, Queen's Park, Birmingham, B4 6BB within 14 days of publication.

Colleges of Education

DURHAM

COLLEGE OF ST. HILD AND ST. LEONARD

University of Durham

Applications are invited from persons qualified by academic attainment and by managerial achievement for appointment as first Director of the newly-created London Regional Management Centre.

The Centre is one of two Regional Management Centres designated by the Department of Education and Science for London and the Home Counties. It will be a self-contained institution within the Polytechnic of Central London, having as founder members the five Inner London Polytechnics and South West London College, and with affiliation open to Management Departments of Polytechnics and Colleges within the area.

The Centre will be concerned with identifying the major management training needs of the region, and with the effective development and employment of resources on a voluntary collaborative basis.

Appointment in the first instance for three years. Secondment considered. Salary in accordance with that of a grade VI head of department in the Burnham FE Report, but would be within the range £8,600-£9,315 (inclusive of London Allowances).

For further particulars write to: F. W. Oakley, Esq., C.B.E., Chairman, Formation Committee, c/o Polytechnic of Central London, 209 Regent Street, London, W.1.

The appointee must possess a Ph.D. with emphasis in the field of Finance. Applicants will also have appropriate experience in higher education in the Business Studies field obtained by lecturing and/or administering in a Faculty of Business Studies at a recognized institution of higher education.

It is desirable that the Head of the School will have had business experience acquired in a responsible position in a company of some significance. Alternatively he may have acted as a consultant to business or to government.

The Council of the Institute encourages academic staff to undertake limited professional consulting for industry and commerce. Opportunities for research work are also available.

The position of Head of School carries tenure and provides for Superannuation and Long Service Leave. The appointment will be effective from January, 1977 or July, 1977.

The Associate Head of the School attracts a full Professor's salary and carries with it a normal teaching load of 3-6 semester hours plus responsibilities for a certain amount of administrative activities within the School as assigned by the Head of the School.

The teaching responsibilities will probably include such subjects as Business Policy, Business Simulation, Organization Theory, and Principles of Management.

The School offers core subjects to all students taking the Bachelor of Business Degree, concentration subjects for the two fields of Operations Management and Public Administration, and is responsible for the integrating subjects at the end of the Degree which are Business Policy and Business Simulation.

Further, the School plans to introduce a Post-Graduate Diploma in Personnel Management and Industrial Relations in the very near future.

The appointee must possess a Ph.D. with emphasis in the field of Management and should have previous experience in teaching and administering in a School of Business Administration.

It is desirable that the Associate Head of the School will have had business experience or experience as a consultant to business or to government.

Academic staff are encouraged to undertake limited professional consulting for industry and commerce. Opportunities for research work are available.

The position of the Associate Head of the School carries tenure and provides for Superannuation and Long Service Leave. The appointment will be effective from January, 1977 or July, 1977.

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